DOCUMENT RESUME

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ABSTRACT

This document contains the course syllabus and 12 independent practice modules for an introductory college algebra course designed to develop student proficiency in the basic algebraic skills. This is designed as the second of a two-semester sequence. Topics include performing operations with radicals and exponents; learning to solve equations; learning to graph linear equations; learning to find solution sets algebraically; and an overview of the properties of angles and triangles. Information given in this syllabus includes: (1) textbook; (2) grading criteria; (3) course description; (4) course procedures; (5) behavioral objectives; and (6) course outline. (CW)

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NEW YORK INSTITUTE OF TECHNOLOGY
CENTER FOR THE NATURAL SCIENCES
DEPARTMENT OF DEVELOPMENTAL MATHEMATICS

COURSE OUTLINE

MATH 3008 - DEVELOPMENTAL MATHEMATICS II - 4 credits/5 hours per week

TEXT: INTRODUCTORY ALGEBRA, 2nd Edition, Wright & New, Allyn and Bacon, Inc.

INSTRUCTOR:_____ OFFICE TELEPHONE:_____

OFFICE LOCATION:_____ OFFICE HOURS:_____

GRADING CRITERIA:

Exams (3)	39%
Quizzes	13
Homework Modules	20
Final (departmental and comprehensive)	28
	100%

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COURSE DESCRIPTION:

It should be noted that this is the second course of a two-semester sequence and must follow 3007. The topics to be covered include performing operations with radicals and exponents, learning to solve equations, learning to graph linear equations, learning to find solution sets algebraically and an overview of the properties of angles and triangles.

COURSE PROCEDURES:

The curriculum is broken into twelve modules, each of approximately one week's length. At the end of each module, the student completes a set of exercises relating to the topic(s) covered. The student is urged to use both his class notes and the worked examples in the text as references. Three classroom tests are to be administered - upon completion of the fourth, eighth and twelfth weeks of study. Also, in the weeks with no exam, a short quiz on current work will be given. Through the implementation of the exams, quizzes and modules, the student will receive frequent feedback regarding his or her progress.

BEHAVIORAL OBJECTIVES:

An attitude that encourages academic progress in mathematics by utilizing one's maximum learning potential.

ATTENDANCE:

Full attendance is required. For medical and other problems, one week of absence will be permitted.

MAKE-UP EXAMINATIONS:

All make-ups are to be taken within one week after the test date.

SMOKING AND EATING:

Neither will be permitted in the classroom.

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NEW YORK INSTITUTE OF TECHNOLOGY

DEPARTMENT OF DEVELOPMENTAL MATHEMATICS

COURSE OUTLINE

MATH 3008 - DEVELOPMENTAL MATHEMATICS II

TEXT: INTRODUCTORY ALGEBRA, 2nd Edition
Franklin Wright and Bill New, Allyn and Bacon, Inc., 1986

WEEK	SECTION	TOPIC
1	4.4-4.5	Review
	5.1-5.3	Factoring
2	5.4	Solving quadratic equations by factoring
	5.7	Additional factoring - review
3	6.2-6.3	Operations with rational fractions
4	6.4	Elementary complex expressions p.259/1-22
	7.1	Fractional equations
5	8.1	Ordered pairs
	8.2	Graphing linear equations
6	8.3-8.5	Equations of a line
7	9.1	Systems of linear equations - solved graphically
8	9.2-9.3	Systems of linear equations - solved algebraically
9	10.1-10.2	Real numbers and radicals
10	10.3	Rationalizing denominators
	Supplement	Review solutions of quadratic equations by factoring
11	11.2	The quadratic formula
	5.5,7.3	Applications using quadratic equations
12	Supplement	Basic geometry
	*12.3,12.4	Right triangles: trigonometric functions and pythagorean formula with applications
		*(See Keedy & Bittinger, Essential Mathematics, p. 212, 213, 518, 522)

3008 - Module 1

FIND THE PRODUCT AND SIMPLIFY.

1. $-8x^3(2x^2)$

   a) $-8x^3 + 2x^2$ b) $2x^2(-4x + 1)$ c) $16x^6$ d) $16x^5$ e) $-16x^5$

2. $5x^2(-3x^2 + 9x)$

   a) $-15x^4 + 45x^2$ b) $8x^4 + 13x^3$ c) $-15x^4 - 45x^2$ d) $-15x^4 + 45x^3$
   e) $8x^4 + 13x$

3. $\begin{array}{r} x^2 + 2x + 1 \\ \underline{\quad\quad 6x - 5} \end{array}$

   a) $x^2 + 8x - 4$ b) $6x^2 + 7x^2 + 4x + 5$ c) $6x^3 + 7x^2 - 4x - 5$
   d) $x^3 + 12x^2 + 6x - 5$ e) $6x^3 + 17x^2 - 16x - 5$

4. $(5x + 2)(3x - 4)$

   a) $15x^2 - 26x - 8$ b) $15x^2 + 14x - 8$ c) $15x^2 + 26x + 8$
   d) $15x^2 - 23x - 12$ e) $15x^2 - 14x - 8$

5. $(-3x^2y + xy^2 - 4y^3)(-2xy)$

   a) $-6x^3y^2 - 2x^2y^3 - 8xy^4$ b) $6x^3y^2 + 2xy^3 + 8xy^3$
   c) $-6x^3y^2 - 2xy^3 + 8y^4$ d) $6x^3y^2 - 2x^2y^3 + 8xy^4$ e) $6x^3y^2 - 2x^2y^3 - 8x^2y^3$

6. $(y - 7)(y^2 + 7y + 49)$

   a) $y^3 - 343$ b) $y^2 + 343$ c) $y^3 + 14y^2 - 343$ d) $y^3 + 98y - 343$
   e) $y^3 - 14y^2 - 343$

7. $-2(y - b)(y + b)$

   a) $4y^2 - b^2$ b) $-2y^2 - 2b^2$ c) $-2y^2 + 4yb + 2b^2$ d) $2b^2 - 2y^2$
   e) $4b^2 - 4y^2$

8. $(2x + 5)(2x - 5)$

   a) $4x^2 + 25$ b) $4x^2 - 10x + 10$ c) $4x^2 - 20x - 25$ d) $4x^2 + 20x - 25$
   e) $4x^2 - 25$

9. $(1 + 7x)(1 + 7x)$

   a) $1 + 49x^2$ b) $1 - 49x^2$ c) $1 - 14x + 49x^2$ d) $1 - 14x - 49x^2$
   e) $1 + 14x + 49x^2$

10. $(x - \frac{3}{4})^2$

    a) $x^2 - \frac{9}{16}$ b) $x^2 + \frac{9}{16}$ c) $x^2 + \frac{3}{2}x + \frac{9}{16}$ d) $x^2 - \frac{3}{2}x + \frac{9}{16}$
    e) $x^2 - \frac{3}{2}x - \frac{9}{16}$

11. $(x - \frac{4}{5})(x - \frac{3}{10})$

a) $x^2 - \frac{12}{50}$ b) $x^2 + \frac{12}{50}$ c) $x^2 - \frac{11}{10}x + \frac{6}{25}$ d) $x^2 + \frac{11}{10}x - \frac{6}{25}$

e) $x^2 + \frac{7}{15}x + \frac{12}{50}$

FACTOR COMPLETELY.

12. $x^2 - 7x - 18$

a) $(x - 2)(x + 9)$ b) $(x + 2)(x + 9)$ c) $(x + 2)(x - 9)$

d) $(x - 2)(x - 9)$ e) $(x - 3)(x + 6)$

13. $4c^2 - 12cb + 9b^2$

a) $(2c + 3b)(2c - 3b)$ b) $(2c - 3b)^2$ c) $(2c + 3b)^2$

d) $(4c - 3b)(c - 3b)$ e) $(2c - 9b)(2c + b)$

14. $-5a^2b^2 - 10a^3b^3 + 5a^4b^4$

a) $5ab(ab - 2a^2b^2 + 5a^3b^3)$ b) $5a^2b^2(-2ab + a^2b^2)$ c) $5a^2b^2(1 - 2ab + a^2b^2)$

d) $5a^2b^2(-1 - 2ab + a^2b^2)$ e) none of these

15. $4x^2y - 9y^3$

a) $y(4x^2 - 9y^2)$ b) $(2xy - 3y^2)(2x + 3y)$ c) $y(2x + 3y)^2$

d) $y(2x - 3y)^2$ e) $y(2x - 3y)(2x + 3y)$

16. $64 - y^2$

a) $(8 + y)(8 - y)$ b) $(8 + y)^2$ c) $(8 - y)^2$ d) $(16 + y)(4 - y)$

e) $2(32 - y)$

17. $s^2 - \frac{16}{81}t^2$

a) $(s - \frac{4}{9}t)^2$ b) $(s + \frac{4}{9}t)^2$ c) $(s - \frac{4}{9}t)(s + \frac{4}{9}t)$

d) $(s - \frac{16}{81}t)(s + t)$ e) $(s + \frac{16}{81}t)(s - t)$

18. $4x + 12 + xy + 3y$

a) $(y - 4)(x + 3)$ b) $(y + 4)(x - 3)$ c) $(-y + 4)(-x + 3)$

d) $(y + 4)(x + 3)$ e) $(y - 4)(-x + 3)$

COMPLETE THE SQUARE BY ADDING THE CORRECT CONSTANT IN EXERCISE 19 AND 20.

19. $x^2 + 18x + _____ = (\quad)^2$

a) 6, $(x + 6)$ b) 81, $(x + 9)$ c) 81, $(x - 9)$ d) 6, $(x - 6)$

e) 3, $(x - 6)$

20. $x^2 - 4x + _____ = (\quad)^2$

a) 2, (x + 4) b) 2, (x - 4) c) 4, (x + 2) d) 4, (x - 4)
e) 4, (x - 2)

3008 - Module 2

SOLVE THE EQUATIONS.

1. $x^2 - 5x = 36$

   a) $x = -9, x = 4$ b) $x = 6, x = -6$ c) $x = 9, x = 4$

   d) $x = 12, x = -3$ e) $x = 9, x = -4$

2. $4(x + 2)(x + 1) = 0$

   a) $x = 4, x = -2, x = -1$ b) $x = -2, x = -1$ c) $x = 0, x = 2, x = 1$

   d) $x = 2, x = 1$ e) $x = -2, x = 1$

3. $x(3x + 5) = 0$

   a) $x = \frac{5}{3}, x = -\frac{5}{3}$ b) $x = -\frac{5}{3}$ c) $x = 0, x = -\frac{5}{3}$ d) $x = 0, x = \frac{3}{5}$

   e) $x = 1, x = \frac{5}{3}$

4. $\frac{3}{5}x(x - 4)(x + 1) = 0$

   a) $x = \frac{3}{5}, x = 4, x = -1$ b) $x = 0, x = -4, x = -1$

   c) $x = -\frac{3}{5}, x = -4, x = 1$ d) $x = 0, x = 4, x = 1$ e) $x = 0, x = 4, x = -1$

5. $x^3 + 5x^2 - 6x = 0$

   a) $x = 0, x = 1, x = -6$ b) $x = 0, x = -1, x = -6$ c) $x = 1, x = 0, x = 6$

   d) $x = 1, x = -1, x = -6$ e) $x = 0, x = -1, x = 6$

6. $3y^2 = 75$

   a) $x = 0, x = 5$ b) $x = 0, x = -5$ c) $x = 5, x = 5$ d) $x = 5, x = -5$

   e) $x = -5, x = -5$

7. $\frac{1}{4}x^2 + x - 15 = 0$

   a) $x = -6, x = -10$ b) $x = 6, x = 10$ c) $x = \frac{1}{2}, x = 15$

   d) $x = \frac{7}{4}, x = -\frac{7}{4}$ e) $x = 6, x = -10$

8. $\frac{2x^2}{5} - 6 = \frac{4x}{5}$

   a) $x = 3, x = -5$ b) none of these c) $x = -3, x = -5$

   d) $x = -3, x = 5$ e) $x = 3, x = 5$

9. Solve $3x^2 - 9x = 0$. The larger of the solutions is:

   a) 0 b) 3 c) -3 d) 9 e) -9

10. Solve $x^2 + 5x = -6$. The smaller of the two solutions is:

    a) -3 b) 3 c) -2 d) 2 e) -6

FACTOR COMPLETELY. ONE FACTOR WILL BE:

11. $3x^2 - 6x - 24$

a) $x + 4$ b) $x - 2$ c) $x - 4$ d) $x - 8$ e) $x + 1$

12. $2ax^2 - 2ax$

a) $2a$ b) $2x$ c) 2 d) $2ax$ e) x

FACTOR EACH OF THE POLYNOMIALS.

13. $20x^3y^2 + 18x^3y - 15x^4y$

a) $-x^3y(20y + 18 - 15x)$ b) $5x^3y(4y + 6 - 3x)$ c) $xy(20xy + 18x^2 - 15xy)$
d) $x^3y(20y + 18 - 15x)$ e) none of these

14. $x^2 - 9x + 20$

a) $(x - 4)(x + 5)$ b) $(x + 4)(x + 5)$ c) $(x - 4)(x - 5)$
d) $(x - 2)(x - 10)$ e) $(x + 2)(x - 10)$

15. $x^2 + 14x + 49$

a) $(x + 7)^2$ b) $(x + 10)(x + 4)$ c) $(x - 7)^2$ d) $(x - 10)(x - 4)$
e) $-(x - 7)^2$

16. $36x^2 - 1$

a) $(6x + 1)^2$ b) $(36x - 1)^2$ c) $(6x - 1)^2$ d) $(36x + 1)^2$
e) $(6x - 1)(6x + 1)$

17. $6x^2 + x - 5$

a) $(6x - 5)(x - 1)$ b) $(6x - 5)(x + 1)$ c) $(6x + 5)(6x + 1)$
d) $(6x + 5)(x - 1)$ e) none of these

18. $3x^2 + x - 24$

a) $(3x - 3)(x + 8)$ b) $(3x + 3)(x - 8)$ c) $(3x - 8)(x + 3)$
d) $(3x + 8)(x + 3)$ e) $(3x - 8)(x - 3)$

19. $16x^2 - 25y^2$

a) $(4x - 5y)^2$ b) $(4x + 5y)^2$ c) $(16x + 5y)(x - 5y)$
d) $(4x - 5y)(4x + 5y)$ e) $(16x + 25y)(16x - 25y)$

20. $2x^3 - x^2 - 3x$

a) $(2x^2 - 3)(x^2 + 1)$ b) $(2x^2 - 3x)(x^2 - 1)$ c) $x(2x - 3)(x - 1)$
d) $x(2x + 3)(x - 1)$ e) $x(2x - 3)(x + 1)$

3008 - Module 3

REDUCE EACH EXPRESSION TO ITS LOWEST TERMS.

1. $\dfrac{x}{x^2 + x}$

a) $\dfrac{1}{x^2 + 1}$ b) $\dfrac{1}{x}$ c) $\dfrac{1}{x + 1}$ d) $\dfrac{1}{x^2}$ e) none of these

2. $\dfrac{x^2 - 9}{x^2 + 6x + 9}$

a) $\dfrac{-1}{6x}$ b) -1 c) $\dfrac{x - 3}{x + 3}$ d) $\dfrac{-3}{2x + 3}$ e) $\dfrac{x}{x + 6}$

3. $\dfrac{4 - x}{3x - 12}$

a) $-\dfrac{1}{3}$ b) $\dfrac{4 - x}{3(x - 4)}$ c) $\dfrac{1}{3}$ d) 3 e) $\dfrac{4 - x}{3}$

4. $\dfrac{x^2 + 2x - 15}{2x^2 - 12x + 18}$

a) $\dfrac{x^2 + x - 15}{x^2 - 6x + 9}$ b) $\dfrac{x + 5}{2(x - 3)}$ c) $\dfrac{x + 5}{2(x - 3)^2}$ d) $\dfrac{(x + 3)(x - 5)}{2(x - 3)}$

e) $\dfrac{(x + 3)(x - 5)}{2(x - 3)^2}$

PERFORM THE INDICATED OPERATIONS. EXPRESS RESULTS IN SIMPLEST FORM.

5. $\dfrac{2x - 4}{3x + 6} \cdot \dfrac{3x}{x - 2}$

a) $\dfrac{x - 2}{x - 1}$ b) $\dfrac{x(x - 2)}{x + 2}$ c) $\dfrac{2x}{(x + 2)(x - 2)}$ d) $\dfrac{2x}{x + 2}$ e) $\dfrac{3x(x - 2)}{(x + 2)}$

6. $\dfrac{x^2 - 2x - 35}{3x^2 + 15x} \div \dfrac{4x - 28}{9x^3}$

a) $\dfrac{3x^2}{4}$ b) $\dfrac{3x^2}{2}$ c) $\dfrac{3x^2(x + 7)(x - 5)}{4(x + 5)(x - 7)}$ d) $\dfrac{3x^3(x + 5)}{4(x^2 + 5x)}$ e) $\dfrac{x^2(-x - 7)}{2(x - 14)}$

7. $\dfrac{(x + 3)^2}{64yz} \cdot \dfrac{40y^2z}{x^2 - 9}$

a) $\dfrac{5y}{8(x - 3)}$ b) $\dfrac{5y}{8}$ c) $\dfrac{5(x + 3)}{8(x - 3)}$ d) $\dfrac{5}{8}$ e) $\dfrac{5y(x + 3)}{8(x - 3)}$

8. $\dfrac{x + y}{3y} \cdot \dfrac{6y^2 - 3y}{x^2 - y^2}$

a) $\dfrac{x - y}{2y - 1}$ b) $\dfrac{2y - 1}{x - y}$ c) $\dfrac{(x + y)(2y - 1)}{x^2 - y^2}$ d) $\dfrac{2y^2 - y}{y(x - y)}$ e) $\dfrac{x^2 - y^2}{(x + y)(2y - 1)}$

9. $\frac{7 - x}{7x^3} \div \frac{7x^2 + 48x - 7}{x^3 + 7x^2} \cdot \frac{7x^2 - 50x + 7}{x^2 - 7x}$

a) $\frac{(7 - x)}{7x^2}$ b) $\frac{7 - x}{x^2}$ c) $\frac{1 - x}{x^2}$ d) $\frac{1 - x}{x}$ e) $\frac{7 - x^2}{7x}$

FIND THE LEAST COMMON DENOMINATOR.

10. $\frac{3}{x} + \frac{2}{x^2} - \frac{1}{3x}$

a) x^3 b) $3x^3$ c) $3x^2$ d) $3x^4$ e) x^4

11. $\frac{1}{t} + \frac{1}{t^2 - 5t} - \frac{1}{t^2 - 25}$

a) $t^2 - 5t$ b) $t^2 - 25$ c) $t(t^2 - 5t)(t^2 - 25)$ d) $t(t^2 - 25)$
e) $t(t^2 - 5t)$

FIND "?" SO THAT THE FRACTIONS WILL BE EQUAL.

12. $x = \frac{?}{x + 2}$

a) $x + (x + 2)$ b) $x + 2$ c) x d) $x^2 + 2$ e) $x(x + 2)$

13. $\frac{y}{y + 4} = \frac{?}{y^2 - 16}$

a) $y(y - 4)$ b) $y - 4$ c) y d) $y(y + 4)$ e) $y(y - 4)(y + 4)$

PERFORM THE INDICATED OPERATIONS. EXPRESS RESULTS IN SIMPLEST FORM.

14. $\frac{x + y}{x - 6} - \frac{5x - 2y}{x - 6}$

a) $\frac{4y - 3x}{x - 6}$ b) $-\frac{4x - y}{x - 6}$ c) $\frac{6x - y}{x - 6}$ d) $\frac{6x + 3y}{x - 6}$ e) $\frac{3y - 4x}{x - 6}$

15. $\frac{3x}{x - y} + \frac{2}{y - x}$

a) $\frac{3x + 2}{x^2 - y^2}$ b) $\frac{6x}{x - y}$ c) $\frac{3x - 2}{x - y}$ d) $\frac{3x + 2}{x + y}$ e) $\frac{3xy - 3x^2 + 2x - 2y}{(x - y)(y - x)}$

16. $\frac{a - b}{ab} - \frac{a - c}{ac} + \frac{b - c}{bc}$

a) 1 b) $\frac{1}{abc}$ c) $-\frac{2}{a}$ d) $\frac{a - b}{abc}$ e) 0

17. $\frac{4}{y + 2} - \frac{4}{y + 3}$

a) $\frac{1}{(y + 2)(y + 3)}$ b) $\frac{4}{(y + 3)(y + 2)}$ c) $\frac{-5}{(y + 2)(y + 3)}$

d) $\frac{-1}{(y + 2)(y + 3)}$ e) none of these

18. $\dfrac{4}{x+6} + \dfrac{8x}{x^2+x-6}$

a) $\dfrac{4(1+2x)}{(x+6)(x^2+x-6)}$ b) $\dfrac{12x}{(x+6)(x-2)(x-3)}$ c) $\dfrac{4(3x^2+13x-6)}{(x+6)(x-2)(x+3)}$

d) $\dfrac{12x^2+52x-24}{(x-2)(x+3)}$ e) none of these

19. $\dfrac{8}{x^2+x-6} + \dfrac{2x}{x^2-3x+2}$

a) $\dfrac{2x^2+14x-8}{(x-2)(x+3)}$ b) $\dfrac{2(x^2+7x-4)}{(x-2)(x+3)(x-1)}$ c) $\dfrac{10x}{(x^2+x-6)(x^2-3x+2)}$

d) $\dfrac{10x}{(x+2)(x-3)(x-1)}$ e) $\dfrac{2(x^2+7x-4)}{(x-2)(x-1)}$

20. $\dfrac{3}{x+2} + \dfrac{2x}{x^2-3x-10} - \dfrac{1}{x^2-2x-15}$

a) $\dfrac{5x^2-x-47}{(x+2)(x-5)(x+3)}$ b) $\dfrac{2x+3}{(x+2)(x-5)(x+3)}$ c) $\dfrac{2x-1}{(x+2)(x-5)(x+3)}$

d) $\dfrac{5x^2-x-47}{(x-5)(x+3)}$ e) $\dfrac{2x-1}{(x-5)(x+3)}$

SIMPLIFY.

1. $\dfrac{\frac{3}{5} + 2}{2 - \frac{3}{4}}$

a) $\frac{5}{-4}$ b) $-\frac{4}{5}$ c) $\frac{13}{4}$ d) $\frac{52}{25}$ e) $\frac{17}{10}$

2. $\dfrac{\frac{a - 4}{3}}{\frac{8 - 2a}{9}}$

a) $\frac{3}{-2}$ b) $\frac{3}{2}$ c) $\frac{(a - 4)(8 - 2a)}{3}$ d) $\frac{3(a - 4)}{8 - 2a}$ e) $\frac{(a - 4)(8 - 2a)}{27}$

3. $\dfrac{\frac{1}{x} + \frac{1}{y}}{\frac{x^2 - y^2}{xy}}$

a) $-\frac{1}{xy}$ b) $\frac{1}{y - x}$ c) $\frac{1}{x - y}$ d) $\frac{y + x}{xy(x - y)}$ e) $\frac{(y + x)(x^2 - y^2)}{(xy)^2}$

4. $\dfrac{\frac{a^2 + 2ad + d^2}{a^3d^3}}{\frac{a + d}{2ad^2}}$

a) $\frac{2ad^2}{a + d}$ b) $\frac{2(a + d)}{a^2d}$ c) $\frac{a^2 + 2ad + d^2}{a^3d^3} \cdot \frac{2ad^2}{a + d}$ d) $\frac{a + d}{a^2d}$

e) $\frac{2(a^2 + 2ad + d^2)}{a^2d(a + d)}$

5. $\dfrac{\frac{3}{x} + \frac{1}{6x}}{\frac{7}{3x}}$

a) $\frac{3}{11}$ b) $\frac{3}{7}$ c) $\frac{19}{42}$ d) $\frac{14}{19}$ e) $\frac{19}{14}$

6. $\dfrac{\frac{x^2}{y} - 4}{\frac{x}{y} + 2}$

a) $x - 2$ b) $\frac{x - 2y}{y}$ c) $\frac{x}{y} - 2$ d) $\frac{x - 2}{y}$ e) -2

7. $\dfrac{\frac{1}{x} - \frac{1}{x^2}}{\frac{1}{x} + \frac{1}{x^2}}$

a) $\frac{x + 1}{x - 1}$ b) 1 c) $\frac{x - 1}{x + 1}$ d) $\frac{x + 1}{x}$ e) $\frac{x - 1}{x}$

WRITE EACH OF THE FOLLOWING AS A SINGLE FRACTION. REDUCE TO LOWEST TERMS.

8. $\frac{4}{x} - \frac{2}{x^2 - 2x} \cdot \frac{x - 2}{5}$

a) $\frac{-10x^2 + 40x}{x(x - 2)}$ b) $\frac{9}{10x}$ c) $\frac{18}{5x}$ d) $\frac{-18}{5x}$ e) $\frac{-9}{10x}$

9. $\frac{x + 3}{x + 2} + \frac{x}{x + 2} \div \frac{x - 3}{x^2}$

a) $\frac{x^3 + x^2 - 9}{(x + 2)(x - 3)}$ b) $\frac{x^2 - 9}{x^2(x + 2)}$ c) $\frac{x(x + 3)(x - 3)}{x^2(x + 2)}$ d) $\frac{x^2(x^2 - 9)}{(x + 2)}$

e) none of these

10. $\frac{x}{x + 3} - \frac{3}{x - 5} \cdot \frac{x^2 - 3x - 10}{x - 2}$

a) $\frac{3x(x^2 - 3x - 10)}{(x + 3)(x - 5)(x - 2)}$ b) $\frac{x^2 - 10}{(x + 3)(x - 5)(x - 2)}$ c) $\frac{2x^2 + 17x + 18}{(x + 3)(x - 2)}$

d) $\frac{-2x^2 - 17x - 18}{(x + 3)(x - 2)}$ e) none of these

FIND THE SOLUTION FOR THE FOLLOWING EQUATIONS.

11. $\frac{5x}{3} + 2 = 12$

a) $\frac{14}{5}$ b) $-\frac{14}{5}$ c) -6 d) $\frac{41}{5}$ e) 6

12. $2x + 7 = 5(x - 1)$

a) -4 b) 4 c) $\frac{8}{7}$ d) $-\frac{8}{7}$ e) 5

13. $3(x + 6) + 14 = 5(x + 2) - 18$

a) 11 b) -11 c) 20 d) -20 e) -44

14. $x - \frac{x}{5} = 10 - \frac{x}{2}$

a) 3 b) -3 c) $\frac{100}{13}$ d) $-\frac{100}{13}$ e) 15

15. $2.4x - 4 = 0.8(x + 3)$

a) 4 b) -4 c) 3 d) -3 e) 2.9

16. $\frac{1}{3} + \frac{1}{x} = \frac{1}{2}$

a) 6 b) 3 c) 4 d) 2 e) -6

17. $\frac{7}{3y - 1} = \frac{1}{y - 3}$

a) $\frac{1}{5}$ b) 2 c) $\frac{1}{2}$ d) 5 e) no solution

18. $\frac{y - 2}{10y} - \frac{y + 1}{15y} = \frac{1}{6}$

a) 2 b) -2 c) 4 d) -4 e) no solution

19. $\frac{2}{x - 3} - \frac{2}{x} = \frac{19}{x^2 - 3x}$

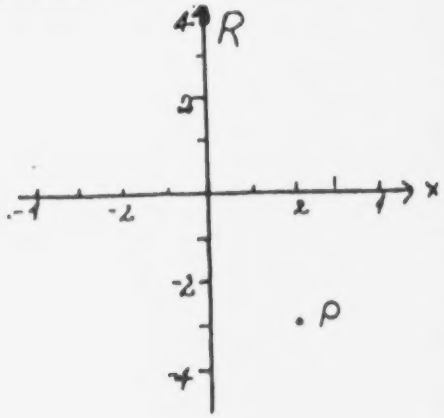
a) 3 b) 4 c) 2 d) 5 e) no solution

20. $\frac{2}{y} + \frac{1}{y + 2} = \frac{4}{y^2 + 2y}$

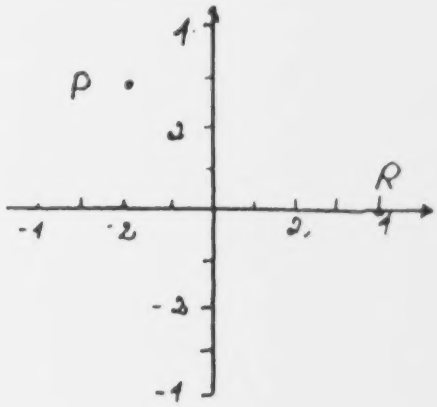
a) $y = 0$ b) $y = 1$ c) $y = -2$ d) no solution e) $\frac{2}{3}$

1. Plot the points, P(-2,3) and R(4,0). Which of the following graphs is correct?

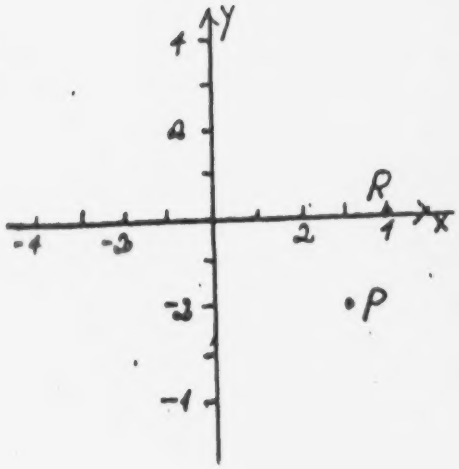
a)



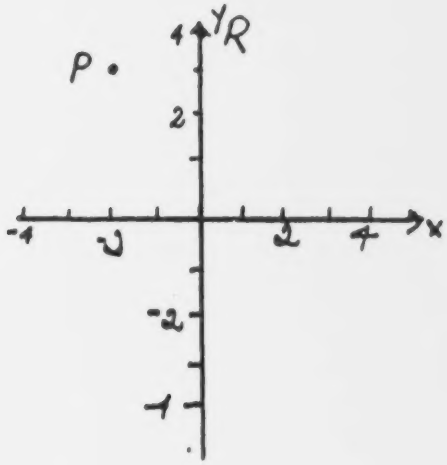
b)



c)



d)



e) none of these

2. If $f(x) = 5 - 3x$, find $f(-2)$

a) -4 b) -1 c) 11 d) 2 e) 0

3. If $g(x) = x^2 - 9x$, find $g(3)$

a) -21 b) -3 c) -6 d) 0 e) -18

4. Determine $f(-3)$ when $f(x) = x^2 - x - 3$

a) -9 b) 3 c) -15 d) -3 e) 9

5. Given the function g described by $g(x) = x^3 - 2x$, find $g(-2)$

a) -12 b) 12 c) 4 d) -4 e) -2

6. Determine $h(4)$ when $h(x) = \frac{3}{4}x - 3$

a) 0 b) $-\frac{9}{4}$ c) $-\frac{5}{4}$ d) undefined e) 1

7. Determine f(5) when $f(x) = \frac{x - 2}{2 - x}$

a) 1 b) 0 c) -1 d) $\frac{3}{7}$ e) $-\frac{3}{7}$

8. How many of the following equations are linear?

$3x = 2$ $x + y = 1$ $x^2 + y = 2$ $4y = 5$

a) 2 b) 4 c) 1 d) 3 e) 0

9. Write the equation in standard form: $x = 3y + 2$

a) $3y - x = -2$ b) $x - 3y = 2$ c) $x + 3y = 2$ d) $3y - x = -2$
e) $x - 3y = -2$

10. How many of the following ordered pairs are solutions of $x + 4y = 12$?

(0,3) (-4,4) (12,0) (4,2)

a) 0 b) 4 c) 3 d) 1 e) 2

11. How many of the following ordered pairs are solutions of $3x = 2y + 9$?

(-1,4) $(\frac{7}{3},-1)$ (3,0) (-2,4)

a) 3 b) 1 c) 2 d) 0 e) 4

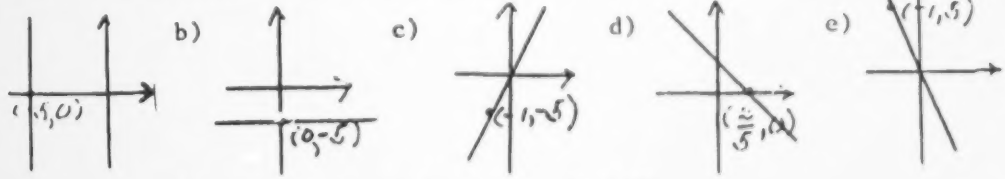
12. How many of the following ordered pairs are solutions of $-3y = 3 - 2x$?

(4,3) (2,1) (1,3) (-3,1)

a) 4 b) 3 c) 2 d) 1 e) 0

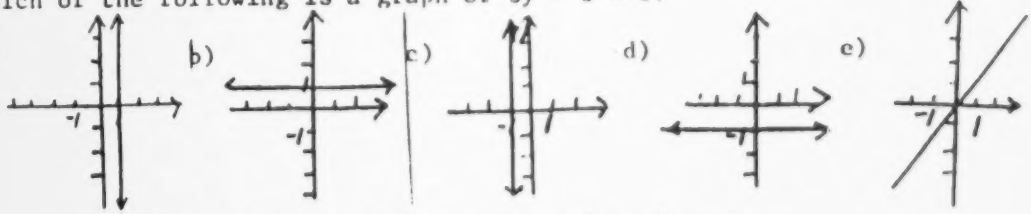
13. Which of the following is a graph of $y = -5x$?

a) b) c) d) e)



14. Which of the following is a graph of $3y - 3 = 0$?

a) b) c) d) e)



15. The coordinates of the y-intercept of $x + 2y = 4$ are:

a) (4,0) b) (0,2) c) (2,0) d) (0,4) e) (2,4)

16. **The coordinates of the x-intercept of $2y - 3x = 6$ are:**

a) (2,0) b) (0,-2) c) (3,2) d) (0,2) e) (-2,0)

DETERMINE THE X-INTERCEPT AND THE Y-INTERCEPT.

17. $y = 3x - 2$

a) x-int. $= -\frac{2}{3}$, y-int. $= -2$ b) x-int. $= \frac{3}{2}$, y-int. $= -2$

c) x-int. $= -2$, y-int. $= \frac{2}{3}$ d) x-int. $= \frac{2}{3}$, y-int. $= -2$

e) x-int. $= -2$, y-int. $= -\frac{2}{3}$

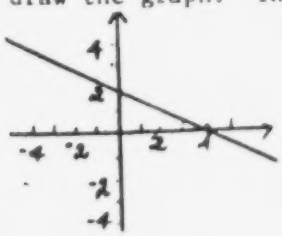
18. $2y + x = +1$

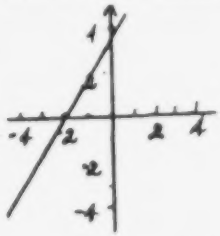
a) x-int. $= 1$, y-int. $= \frac{1}{2}$ b) x-int. $= \frac{1}{2}$, y-int. $= -1$

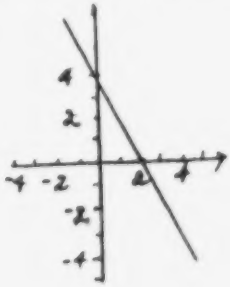
c) x-int. $= -1$, y-int. $= \frac{1}{2}$ d) x-int. $= \frac{1}{2}$, y-int. $= 1$

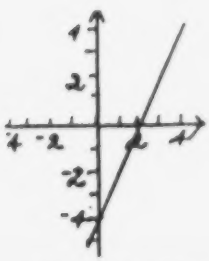
e) x-int. $= 1$, y-int. $= 2$

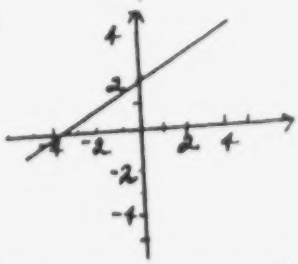
19. Determine the x-intercept and the y-intercept of $2x + y = 4$. Use these to draw the graph. The graph looks like which one of the following choices?

a) 

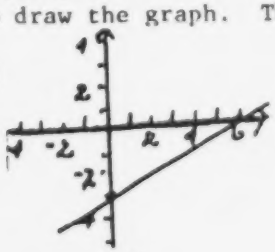
b) 

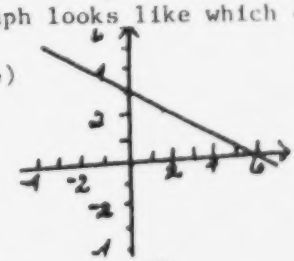
c) 

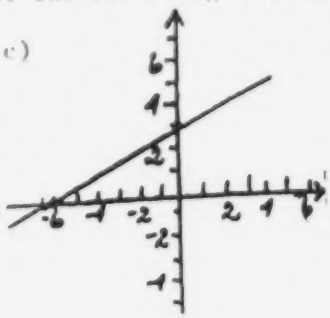
d) 

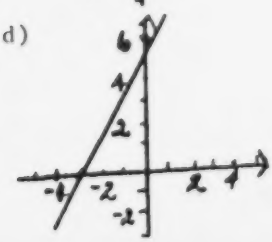
e) 

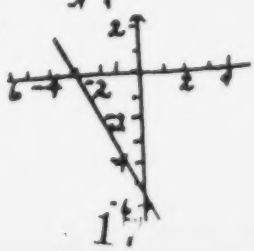
20. Determine the x-intercept and the y-intercept of $x - 2y = 6$. Use these to draw the graph. The graph looks like which one of the following choices?

a) 

b) 

c) 

d) 

e) 

FIND THE SLOPE OF THE LINE DETERMINED BY EACH PAIR OF POINTS:

1. (8,3) and (5,-2)

   a) $\frac{5}{3}$ b) $\frac{3}{5}$ c) $\frac{1}{3}$ d) 3 e) $-\frac{5}{3}$

2. (-1,2) and (-2,4)

   a) $-\frac{2}{3}$ b) -2 c) $-\frac{1}{2}$ d) $-\frac{3}{2}$ e) 2

3. (1,2) and (-1,-2)

   a) $\frac{1}{2}$ b) 0 c) -1 d) 2 e) undefined

4. Find the equation of the line passing through (0,-3) with slope equal to $\frac{3}{2}$

   a) $2y = 3x - 3$ b) $y = 3x - 6$ c) $2y = 3x - 6$ d) $2y - 3x = 6$
   e) $2y - 3x = 3$

DETERMINE THE SLOPE AND Y-INTERCEPT:

5. $y = 1 - \frac{x}{2}$

   a) $m = -\frac{1}{2}$, $b = 1$ b) $m = -2$, $b = 1$ c) $m = 1$, $b = -\frac{1}{2}$
   d) $m = -\frac{1}{2}$, $b = 2$ e) $m = \frac{1}{2}$, $b = 1$

6. $12x - 3y = 9$

   a) $m = 12$, $b = -9$ b) $m = 4$, $b = -9$ c) $m = 12$, $b = -3$
   d) $m = 4$, $b = -3$ e) $m = -4$, $b = 3$

7. $y = -2$

   a) $m = 0$, $b = 2$ b) $m = 2$, $b = 0$ c) $m = 0$, $b = -2$
   d) m = undefined, $b = 2$ e) $m = 5$, b does not exist

FOR EACH OF THE SIX GRAPHS, DETERMINE THE SLOPE AND Y-INTERCEPT:

8. Graph A

   a) $m = -8$, $b = -1$ b) $m = -1$, $b = 8$ c) $m = 1$, $b = 8$
   d) $m = -2$, $b = 8$ e) $m = -8$, $b = 8$

9. Graph B

   a) $m = 0$, $b = 8$ b) $m = 2$, $b = 5$ c) $m = 1$, $b = 10$
   d) $m = 10$, $b = 0$ e) $m = 0$, $b = 10$

10. Graph C

a) $m = \frac{2}{3}$, b = 0 b) $m = \frac{3}{2}$, b = 0 c) $m = -\frac{6}{4}$, b = 0

d) $m = -\frac{2}{3}$, b = 0 e) $m = \frac{4}{6}$, b = 1

11. Graph D

a) m = 0, b = -6.5 b) m = 0, b = -7 c) m = 1, b = -7

d) m = 1, b = 7 e) m = undefined, b does not exist

12. Graph E

a) $m = -\frac{8}{6}$, b = 6 b) $m = \frac{4}{3}$, b = 6 c) m = 4, b = 6

d) $m = -\frac{3}{4}$, b = 6 e) $m = \frac{6}{8}$, b = 6

13. Graph F

a) $m = -\frac{1}{2}$, b = -12 b) m = -2, b = -12 c) m = 2, b = -12

d) $m = \frac{1}{2}$, b = -12 e) $m = -\frac{1}{2}$, b = 12

FOR EACH OF THE SIX GRAPHS, WHICH IS THE EQUIVALENT EQUATION?

14. Graph A

a) y = x - 8 b) y = x + 8 c) y = -x - 8 d) y = -x + 8 e) y = 2x + 8

15. Graph B

a) y = x + 10 b) y = -x + 10 c) x = 10 d) y = 10 e) y = -10

16. Graph C

a) $y = \frac{2}{3}x + \frac{1}{3}$ b) $y = \frac{2}{3}x$ c) $y = \frac{3}{2}x$ d) $y = -\frac{2}{3}x$ e) $y = -\frac{3}{2}x$

17. Graph D

a) y = -7 b) y = 7 c) x = 7 d) x = -7 e) y = -x + 7

18. Graph E

a) $y = -\frac{3}{4}x + 6$ b) $y = -\frac{3}{4}x - 6$ c) $y = \frac{3}{4}x + 6$ d) $y = \frac{4}{3}x - 8$

e) $y = -\frac{3}{4}x - \frac{3}{2}$

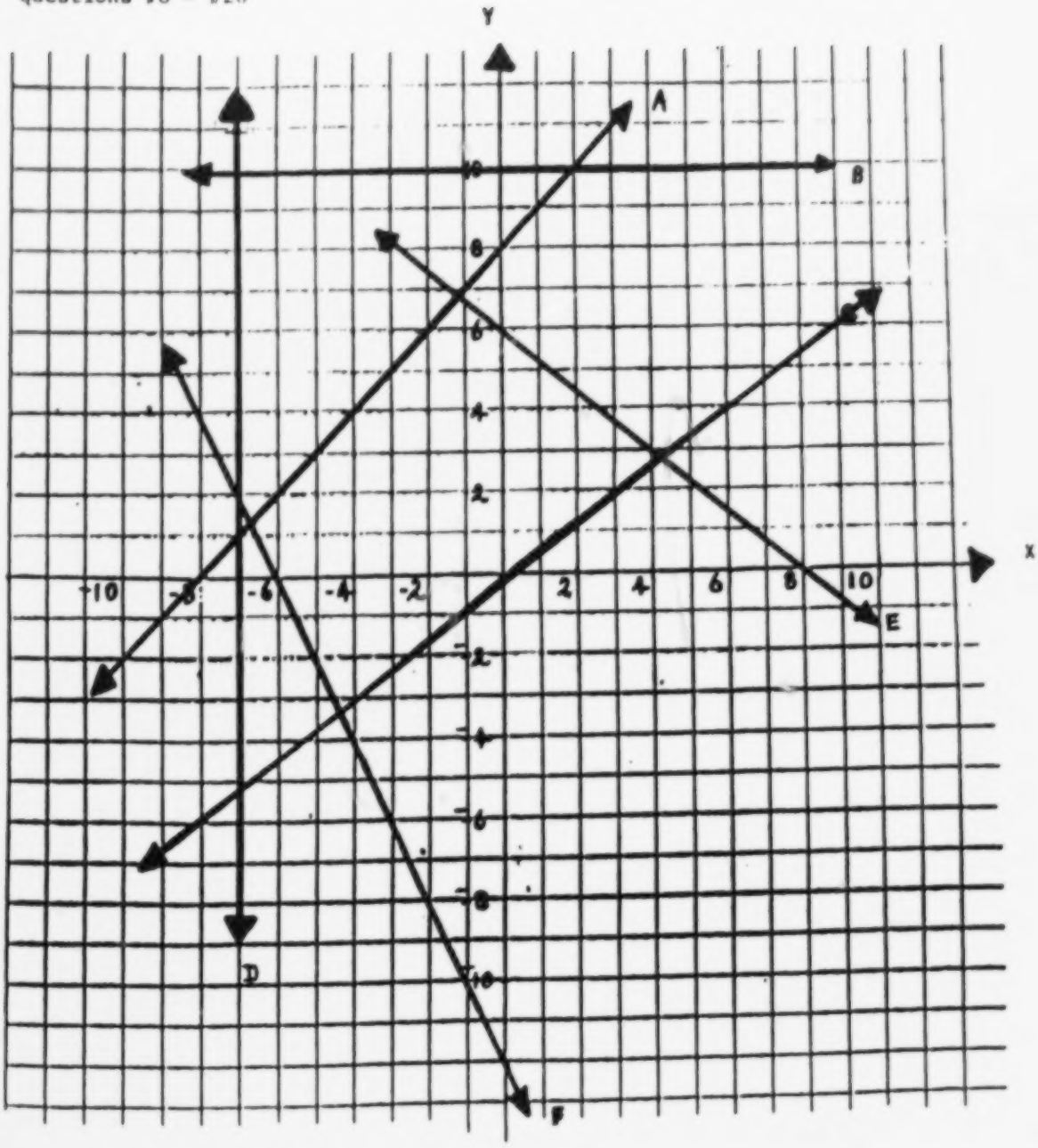
19. Graph F

a) y = -2x - 12 b) y = 2x + 12 c) y = -2x + 12 d) $y = -\frac{1}{2}x + 6$

e) $y = -\frac{1}{2}x - 6$

20. Which graph is parallel to the x-axis?

a) B b) A c) D d) E e) F


Y
X
A
B
C
D
E
F
10
8
6
4
2
-2
-4
-6
-8
-10
-10
-8
-6
-4
-2
2
4
6
8
10

3008 - Module 7 (10 problems)

DETERMINE WHICH ONE, IF ANY, OF THE GIVEN POINTS LIE ON BOTH OF THE LINES DETERMINED BY THE GIVEN SYSTEMS OF EQUATIONS:

1. $\begin{cases} 2x + y = 3 \\ x - 2y = 4 \end{cases}$

a) (4,0) b) (2,-1) c) (3,-3) d) (6,1) e) none of these

2. $\begin{cases} -2x + y = 2 \\ x + y = -1 \end{cases}$

a) (0,-1) b) (0,2) c) (1,-2) d) (-1,0) e) none of these

USING GRAPH PAPER, SOLVE EACH SYSTEM GRAPHICALLY. SUBMIT YOUR GRAPHS WITH THE SCANTRON FORM.

3. $2x - y = 4$
   $3x + 2y = 6$

a) (-2,6) b) (3,2) c) (0,2) d) (-1,-6) e) (2,0)

4. $2x + 3y = 8$
   $x - 2y = -3$

a) (4,0) b) (-1,1) c) (1,2) d) $(\frac{5}{2},1)$ e) $(0,\frac{3}{2})$

5. $y = -2x + 1$
   $4x + y = 5$

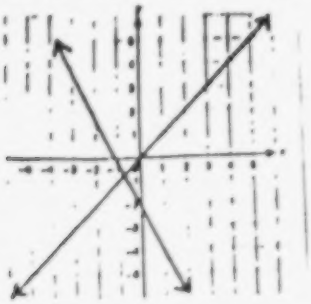
a) (-3,2) b) (-2,-3) c) (-3,-2) d) (2,-3) e) (1,-1)

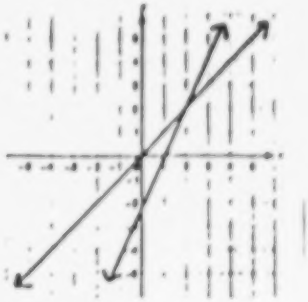
6. $2x - y = -9$
   $y - x = 8$

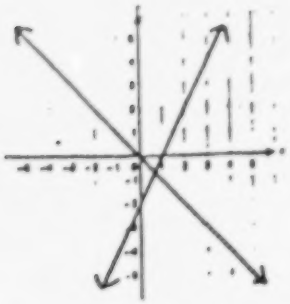
a) (-1,7) b) (0,8) c) (1,9) d) (-1,9) e) (-2,6)

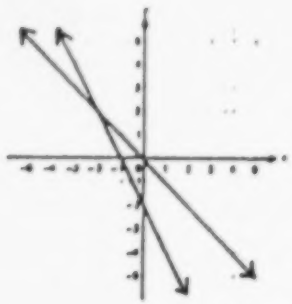
7. Solve graphically the system of equations: $4x - 2y = 4$
$x - y = 0$

The graph looks like which of the following choices?

a) 

b) 

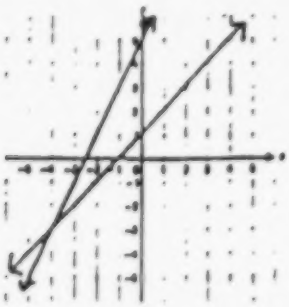
c) 

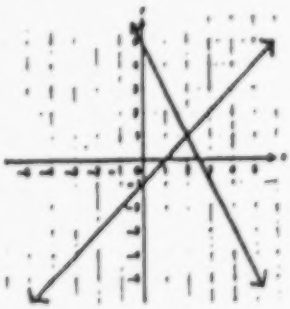
d) 

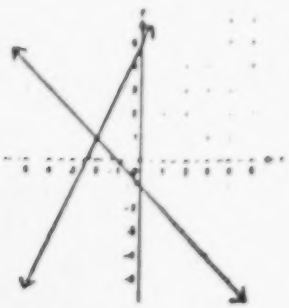
e) none of these

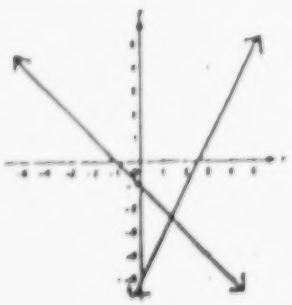
8. Solve graphically the system of equations: $x + y = -1$
$-2x + y = 5$

The graph looks like which of the following choices?

a) 

b) 

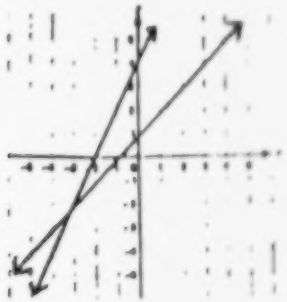
c) 

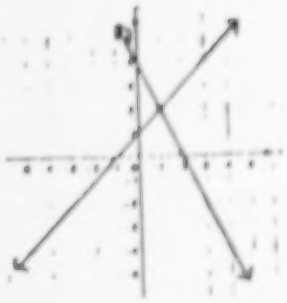
d) 

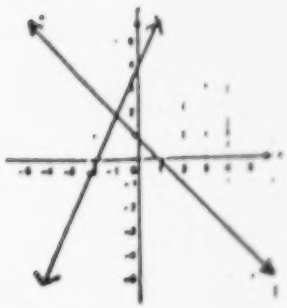
e) none of these

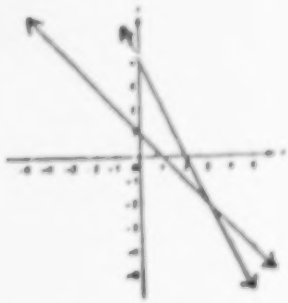
9. Solve graphically the system of equations: $x + y = 1$
$2x + y = 4$

The graph looks like which of the following choices?

a) 

b) 

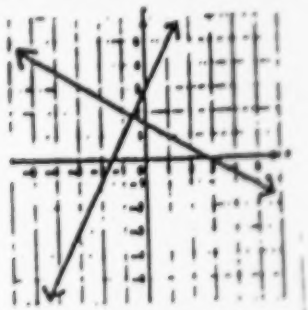
c) 

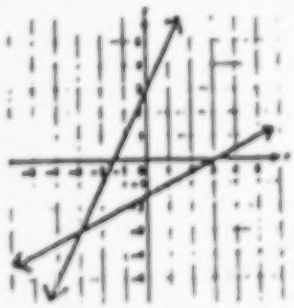
d) 

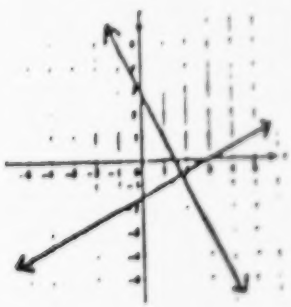
e) none of these

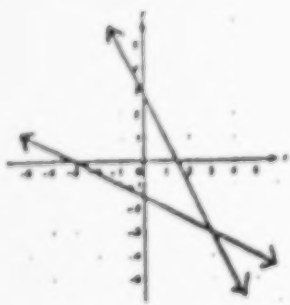
10. Solve graphically the system of equations: $2x - y = -3$
$x - 2y = 3$

The graph looks like which of the following choices?

a) 

b) 

c) 

d) 

e) none of these

SOLVE USING THE SUBSTITUTION METHOD.

1. $3x + y = -7$
   $x = 1 - 2y$

   a) (-1,1) b) (-3,2) c) (1,0) d) (3,2) e) $(-\frac{5}{3},-2)$

2. $5x - 2y = 1$
   $y = 3 - x$

   a) (2,1) b) (-1,-3) c) (3,7) d) (-2,5) e) (1,2)

3. $x + y = 1$
   $2x + 3y = -2$

   a) (5,-4) b) (2,-1) c) (-3,4) d) (-4,2) e) (1,0)

4. $x - y = 7$
   $2x + 5y = 0$

   a) (-5,-2) b) (5,2) c) (5,-2) d) (-2,5) e) (-5,2)

5. $3x - 8y = 2$
   $x - 5y = -4$

   a) (-2,-1) b) (6,2) c) (1,1) d) (-9,-1) e) (14,5)

6. $3x = 1 - y$
   $7x + 3y = 5$

   a) (1,-2) b) (-1,-2) c) (2,-3) d) (-1,4) e) (2,-5)

7. $2y = 6 - x$
   $4x - 3y = 2$

   a) (2,2) b) (8,-1) c) (-2,4) d) (5,6) e) $(\frac{1}{2},0)$

SOLVE USING THE ADDITION METHOD.

8. $2x + 9y = -3$
   $-2x - 6y = 6$

   a) (3,-1) b) (-3,3) c) (-6,1) d) (12,-3) e) (-3,0)

9. $5x - y = 5$
   $6x - 2y = 2$

   a) (0,-5) b) (1,0) c) (0,-1) d) (1,2) e) (2,5)

10. $2x - y = 8$
    $x + 3y = 4$

    a) $(\frac{12}{5},-\frac{16}{5})$ b) (3,-2) c) (4,0) d) (-2,2) e) (1,-6)

11. $3x + 2y = 6$
$-x + 3y = -13$

a) $(-4,9)$ b) $(\frac{80}{33},-\frac{7}{11})$ c) $(4,-3)$ d) $(7,-2)$ e) $(-2,6)$

12. $2x + 5y = 11$
$3x + 8y = 18$

a) $(-2,3)$ b) $(0,2)$ c) $(3,1)$ d) $(-7,5)$ e) $(8,-1)$

12. $5x = 8 + 2y$
$8y = 16 + 10x$

a) $(-2,-9)$ b) $(2,1)$ c) $(-4,-14)$ d) $(-\frac{24}{5},8)$ e) $(\frac{24}{5},8)$

14. $5x + 2y = 3$
$-2x + 3y = 14$

a) $(3,-6)$ b) $(1,-1)$ c) $(-3,9)$ d) $(-1,4)$ e) $(1,4)$

SOLVE BY ANY APPROPRIATE METHOD. USE THE VALUES OF X AND Y TO COMPLETE THE ALGEBRAIC EXPRESSION.

15. $2x + y = 7$
$2x - y = 1$ then, $2x - y =$

a) -8 b) 1 c) 8 d) 6 e) -7

16. $x + 3y = 7$
$5x - 2y = 1$ then, $y - x =$

a) 2 b) -3 c) 3 d) -1 e) 1

17. $2x = 5y + 1$
$4x + 6y = -14$ then, $x + y =$

a) -3 b) 1 c) 3 d) 4 e) -2

18. $3x + 2y = 1$
$5x + 3y = 3$ then, $x - y =$

a) 2 b) 7 c) -3 d) 15 e) -7

19. $-4x + y = 3$
$6x - 7y = 1$ then, $y - x =$

a) -2 b) 6 c) 0 d) 11 e) it can't be determined

20. $5x - 2y = 1$
$3 = x + y$ then, $2x + y =$

a) 5 b) $\frac{25}{7}$ c) 3 d) 4 e) $\frac{16}{7}$

SIMPLIFY COMPLETELY.

1. $\sqrt{48}$

   a) $16\sqrt{3}$ b) $4\sqrt{3}$ c) $2\sqrt{12}$ d) $12\sqrt{2}$ e) $6\sqrt{8}$

2. $-\sqrt{\frac{9}{64}}$

   a) $-\frac{3}{8}$ b) $\frac{3}{8}$ c) $-\frac{3}{64}$ d) $\frac{9}{8}$ e) $\frac{9}{-8}$

3. $\sqrt{.0169}$

   a) 0.0013 b) 0.013 c) 0.13 d) 0.0043 e) 1.30

4. $\sqrt{\frac{125}{100}}$

   a) $\sqrt{5}$ b) $2\sqrt{5}$ c) $\frac{\sqrt{5}}{2}$ d) $5\sqrt{2}$ e) $\frac{\sqrt{2}}{5}$

5. $\sqrt{50x^6y^5}$

   a) $2x^2y^2\sqrt{5y}$ b) $2x^3y^2\sqrt{5y}$ c) $5x^2y^2\sqrt{2y}$ d) $5x^3y^2\sqrt{2y}$ e) $25x^2y^2\sqrt{2xy}$

6. $\sqrt{9(x-5)^2}$

   a) $3(x-5)$ b) $9\sqrt{x-5}$ c) $9\sqrt{(x-5)^2}$ d) $(x-5)\sqrt{3}$ e) $\sqrt{3}(x-5)$

7. $\sqrt{\frac{a^3b^3}{16ab^5}}$

   a) $\frac{a}{4b}$ b) $\frac{ab}{4}\sqrt{ab}$ c) $\frac{ab}{16}\sqrt{\frac{a}{b}}$ d) $\frac{a}{4b^2}$ e) $\frac{ab}{4}$

8. $\sqrt{8} - \sqrt{5} - \sqrt{20}$

   a) $-\sqrt{17}$ b) $-\sqrt{5}$ c) $\sqrt{2} - 2\sqrt{5}$ d) $4\sqrt{2} - 5\sqrt{5}$ e) $2\sqrt{2} - 3\sqrt{5}$

9. $\sqrt{50} - \sqrt{32} + \sqrt{18}$

   a) $2\sqrt{4}$ b) $2\sqrt{18}$ c) $4\sqrt{2}$ d) 6 e) 4

10. $\sqrt{24} + \sqrt{54} - \sqrt{180}$

    a) $-\sqrt{102}$ b) $5\sqrt{6} - 6\sqrt{5}$ c) $13\sqrt{6} - 36\sqrt{5}$ d) $13\sqrt{6} - 6\sqrt{5}$ e) $5\sqrt{6} - 36\sqrt{5}$

11. $6\sqrt{\frac{5}{9}} + \sqrt{45}$

    a) $\sqrt{\frac{5}{3}} + 3\sqrt{5}$ b) $\sqrt{\frac{5}{3}} + 5\sqrt{3}$ c) $\frac{2\sqrt{5}}{3} + 5\sqrt{3}$ d) $\frac{2\sqrt{5}}{3} + 3\sqrt{5}$ e) $5\sqrt{5}$

12. $\frac{\sqrt{5}}{3} + \frac{\sqrt{5}}{2}$

    a) $\frac{2\sqrt{5}}{6}$ b) $\frac{2\sqrt{5}}{5}$ c) $\frac{5}{6}$ d) $\frac{5\sqrt{5}}{6}$ e) $\sqrt{5}$

13. $\sqrt{2a}\sqrt{6}\sqrt{3a}$

a) $6\sqrt{a}$ b) $6a^2$ c) $6a$ d) $12a\sqrt{3}$ e) $6a\sqrt{6}$

14. $\sqrt{6}(\sqrt{3} - \sqrt{2})$

a) $\sqrt{6}$ b) $2\sqrt{2}$ c) $3\sqrt{2} - 2\sqrt{3}$ d) $2\sqrt{3} - 3\sqrt{2}$ e) $\sqrt{5}$

15. $\sqrt{3a}(\sqrt{12a} - \sqrt{27a})$

a) $-\sqrt{45a^2}$ b) $-3a\sqrt{5}$ c) -3 d) $-3a$ e) $-3\sqrt{a}$

16. $(\sqrt{5} - \sqrt{3})(3\sqrt{5} - \sqrt{3})$

a) $18 - 8\sqrt{15}$ b) $18 - 4\sqrt{15}$ c) $3\sqrt{5} - 4\sqrt{15} + \sqrt{3}$ d) 4 e) $18 - 2\sqrt{15}$

17. $(\sqrt{x} - 3)(\sqrt{x} + 3)$

a) $x - 9$ b) $x - 3$ c) $\sqrt{x} - 9$ d) $x - 6\sqrt{x} - 9$ e) $\sqrt{2x} - 9$

18. $(2\sqrt{3} + 4)(2\sqrt{3} - 3)$

a) $6(\sqrt{3} - 2)$ b) $24 + 2\sqrt{3}$ c) $12 + 2\sqrt{3}$ d) $2\sqrt{3}$ e) $-2\sqrt{3}$

19. $(\sqrt{3} - 4)^2$

a) 19 b) $19 + 8\sqrt{3}$ c) -7 d) -13 e) $19 - 8\sqrt{3}$

20. $(2\sqrt{6} + 3)(2\sqrt{6} - 3)$

a) $4\sqrt{6} - 9$ b) 9 c) 15 d) 3 e) $12\sqrt{6} - 9$

SIMPLIFY COMPLETELY.

1. $\frac{\sqrt{125}}{\sqrt{10}}$

a) 12.5 b) $\frac{5\sqrt{5}}{\sqrt{10}}$ c) $5\sqrt{2}$ d) $\frac{5\sqrt{2}}{2}$ e) $\frac{5}{2}$

2. $\frac{\sqrt{2}}{\sqrt{12}}$

a) $\frac{\sqrt{12}}{6}$ b) $\frac{\sqrt{6}}{6}$ c) $\frac{\sqrt{2}}{6}$ d) $\frac{1}{6}$ e) $\frac{2\sqrt{6}}{6}$

3. $\frac{\sqrt{36}}{\sqrt{11}}$

a) $\frac{6}{\sqrt{11}}$ b) $\frac{6\sqrt{11}}{11}$ c) $\frac{\sqrt{396}}{11}$ d) $\frac{\sqrt{25}}{11}$ e) $\frac{6\sqrt{6}}{11}$

4. $\frac{\sqrt{x^4y}}{\sqrt{5y}}$

a) $\frac{y}{5}\sqrt{x^2}$ b) $\frac{x^2y}{5}$ c) $\frac{x^2\sqrt{5}}{y}$ d) $\frac{x^2\sqrt{5}}{5}$ e) $\frac{xy\sqrt{5}}{5}$

5. $\frac{20}{\sqrt{2}}$

a) 10 b) $\sqrt{10}$ c) $5\sqrt{2}$ d) $10\sqrt{2}$ e) $\sqrt{18}$

6. $\frac{\sqrt{x} + 1}{\sqrt{x}}$

a) 1 b) $\sqrt{x}$ c) $\frac{x + \sqrt{x}}{x}$ d) $1 + \sqrt{x}$ e) 2

7. $\sqrt{5} - \sqrt{\frac{1}{5}}$

a) $\frac{2}{5}$ b) $\frac{2}{5}\sqrt{5}$ c) $\frac{4}{5}\sqrt{5}$ d) $\frac{4}{5}$ e) no solution

8. $\frac{3}{\sqrt{2} - 1}$

a) $3\sqrt{2} + 3$ b) $\sqrt{2} + 1$ c) $3\sqrt{2} - 1$ d) $\frac{3\sqrt{2} - 1}{3}$ e) $\frac{3\sqrt{2} + 1}{3}$

9. $\frac{\sqrt{5}}{\sqrt{5} + 2}$

a) $5 - 2\sqrt{5}$ b) $-\sqrt{5}$ c) $\frac{1}{3}$ d) $\frac{5 - 2\sqrt{5}}{3}$ e) $\frac{5 - 2\sqrt{5}}{21}$

10. $\frac{\sqrt{2}}{\sqrt{x} - 2}$

a) $\frac{\sqrt{2}(\sqrt{x} + 2)}{x - 4}$ b) $\frac{\sqrt{2}(\sqrt{x} - 2)}{x - 4}$ c) $\frac{\sqrt{2}(\sqrt{x} + 2)}{x + 4}$ d) $\frac{\sqrt{2}(\sqrt{x} + 2)}{x + 4}$ e) $\frac{\sqrt{2x} - \sqrt{2}}{x - 4}$

11. $\dfrac{\sqrt{5} - 3}{\sqrt{5} + 1}$

a) $\dfrac{\sqrt{3} - 1}{4}$ b) $\dfrac{5 + 4\sqrt{3}}{4}$ c) $2 - \sqrt{5}$ d) $\dfrac{5 - 4\sqrt{3}}{4}$ e) $\dfrac{8 - \sqrt{5}}{4}$

12. $\dfrac{\sqrt{7} + \sqrt{5}}{\sqrt{7} - \sqrt{5}}$

a) $6 + 2\sqrt{35}$ b) 6 c) $\sqrt{6}$ d) $6 + \sqrt{35}$ e) $12 + \sqrt{35}$

13. $\dfrac{4\sqrt{5}}{3 - \sqrt{5}}$

a) $\dfrac{4}{3}$ b) $3\sqrt{5} + 20$ c) $12\sqrt{5} + 5$ d) $-6\sqrt{5} - 10$ e) $3\sqrt{5} + 5$

14. $\dfrac{\sqrt{a} + \sqrt{b}}{\sqrt{a} - \sqrt{b}}$

a) $\dfrac{a + b}{a - b}$ b) 0 c) $\dfrac{a + 2\sqrt{ab} + b}{a - b}$ d) $\dfrac{a + \sqrt{2ab} + b}{a - b}$ e) $\dfrac{a^2 + 2\sqrt{ab} + b^2}{a - b}$

15. $\dfrac{11}{\sqrt{3} - 4}$

a) $\dfrac{\sqrt{3}}{13}$ b) $\dfrac{4}{13}$ c) $\dfrac{\sqrt{3} + 4}{13}$ d) $\dfrac{-11\sqrt{3} - 44}{13}$ e) $\dfrac{11\sqrt{3} + 44}{13}$

SOLVE THE FOLLOWING EQUATIONS BY FACTORING.

16. $2x^2 + x = 3$

a) $x = 1$, $x = -\dfrac{3}{2}$ b) $x = 3$, $x = -2$ c) $x = 2$, $x = -3$

d) $x = 1$, $x = -3$ e) $x = \dfrac{3}{2}$, $x = -1$

17. $2a^2 - 10a = 0$

a) $a = 2$, $a = -5$ b) $a = -2$, $a = 5$ c) $a = 0$, $a = 5$

d) $a = 2$, $a = 10$ e) $a = 10$, $a = 0$

18. $y^2 - 9y + 18 = -2$

a) $y = 3$, $y = 6$ b) $y = -3$, $y = -6$ c) $y = -4$, $y = -5$

d) $y = 9$, $y = 2$ e) $y = 4$, $y = 5$

19. $x(x - 2) = 15$

a) $x = 0$, $x = 2$ b) $x = 0$, $x = -2$ c) $x = 3$, $x = -5$

d) $x = -3$, $x = 5$ e) $x = 1$, $x = -15$

20. $x + 3 = \dfrac{4}{x}$

a) $x = 3$, $x = 1$ b) $x = 1$, $x = -4$ c) $x = -1$, $x = 4$

d) $x = 2$, double root e) $x = -3$, $x = -1$

SOLVE THE EQUATIONS BY FACTORING.

1. $x^2 = 16$

   a) 4,-4 b) 8,2 c) 8,-2 d) 4,4 e) -4,-4

2. $3x^2 - 16x = -5$

   a) 1,3 b) $\frac{1}{3}$,-5 c) $\frac{5}{3}$,1 d) 1,2 e) $\frac{1}{3}$,5

3. $x^2 - x - 12 = 0$

   a) 4,-3 b) -4,-3 c) -4,3 d) 1,6 e) 4,3

4. $x^2 - 9x = 0$

   a) 1,9 b) 0,-9 c) 0,9 d) 0,8 e) -1,9

REWRITE THE EQUATIONS IN GENERAL FORM $ax^2 + bx + c = 0$ TO FIND a, b and c.

5. $2x^2 = x + 3$

   a) a = 2, b = 3, c = 1 b) a = 2, b = -1, c = 3 c) a = 1, b = 3, c = -2
   d) a = 2, b = -1, c = -3 e) a = 3, b = -1, c = 2

6. $x^2 - 7 = 0$

   a) a = 0, b = 1, c = 3 b) a = 1, b = 2, c = -1 c) a = 1, b = 0, c = -7
   d) a = 1, b = 7, c = 0 e) a = -1, b = 0, c = 7

7. $-3x^2 + 8x = 0$

   a) a = -3, b = 8, c = 0 b) a = 0, b = 8, c = 3 c) a = 8, b = 0, c = 3
   d) a = 3, b = -8, c = 0 e) a = 3, b = 0, c = 8

SOLVE USING THE QUADRATIC FORMULA. SIMPLIFY.

8. $3 = 7x - 2x^2$

   a) $\frac{7}{4} \pm \frac{1}{4}$ b) $\frac{1}{2}$,3 c) $-\frac{7}{4} \pm \frac{5}{4}$ d) $-\frac{7}{4} \pm \frac{1}{4}$ e) $-\frac{1}{4} \pm \frac{7}{4}$

9. $8x^2 + 4x = 1$

   a) $\frac{1}{4} \pm \sqrt{3}$ b) $\frac{1}{4} \pm \frac{\sqrt{3}}{4}$ c) $\frac{1}{4} \pm 4\sqrt{3}$ d) $\frac{1}{4} \pm \sqrt{4}$ e) $-\frac{1}{4} \pm \frac{\sqrt{3}}{4}$

10. $2x^2 + x = 1$

    a) $\frac{1}{4} \pm \frac{3}{4}$ b) $\frac{1}{2}$,-1 c) $\frac{1}{4} \pm \frac{\sqrt{3}}{4}$ d) $-\frac{1}{4} \pm \frac{\sqrt{3}}{4}$ e) $1 \pm \sqrt{3}$

11. $3x^2 - 16x = 0$

    a) $0, \frac{16}{3}$ b) $0, -\frac{16}{3}$ c) $1, \frac{16}{3}$ d) $-1, \frac{16}{3}$ e) $\frac{1}{3}, \frac{16}{3}$

12. $4x^2 + 1 = 4x$

a) $\frac{1}{2} \pm \frac{\sqrt{2}}{2}$ b) $\frac{1}{2}$ c) $\frac{1}{2} \pm \sqrt{2}$ d) $\pm\sqrt{2}$ e) $\pm\frac{\sqrt{2}}{2}$

13. $2 = 12x - 9x^2$

a) $\frac{2}{3} \pm \sqrt{2}$ b) $-\frac{2}{3} \pm \sqrt{2}$ c) $\frac{2}{3} \pm \frac{\sqrt{2}}{3}$ d) $-\frac{2}{3} \pm \frac{\sqrt{2}}{3}$ e) $\frac{2}{3} \pm \sqrt{3}$

14. $x^2 + 2x = 8$

a) 4,2 b) 4,-2 c) 4,1 d) 4,-1 e) -4,2

SOLVE THE FOLLOWING WORD PROBLEMS.

15. The square of a positive number plus the number is 72. Find the number.

a) 5 b) 6 c) 7 d) 8 e) 9

16. The difference of two positive numbers is 5. Their product is 24. Find the numbers.

a) 6,4 b) 12,2 c) 8,3 d) -6,-4 e) -8,-3

17. The length of a rectangle is 3 feet more than its width. Its area is 28 square feet. Find the width of the rectangle.

a) 8 b) 2 c) 14 d) 7 e) 4

18. The area of a square is equal numerically to twice its perimeter. What is the length of its side?

a) 2 b) 4 c) 6 d) 8 e) 10

19. A swimming pool is 8 yards longer than it is wide. If the area is 48 square yards, find the width of the pool.

a) 12 b) 4 c) 8 d) 6 e) 24

20. Two times the square of a positive integer increased by three times the integer is 44. Find the integer.

a) 11 b) 2 c) 22 d) 6 e) 4

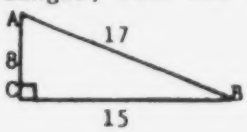
1. Given ΔABC, Cos B = ?

a) $\frac{b}{a}$ b) $\frac{a}{b}$ c) $\frac{c}{a}$ d) $\frac{a}{c}$ e) $\frac{b}{c}$

2. Given ΔABC, Tan B = ?

a) $\frac{b}{c}$ b) $\frac{b}{a}$ c) $\frac{c}{b}$ d) $\frac{a}{b}$ e) $\frac{a}{c}$

For this triangle, find the following function values.



3. cos B

a) $\frac{8}{17}$ b) $\frac{17}{8}$ c) $\frac{15}{8}$ d) $\frac{17}{15}$ e) $\frac{15}{17}$

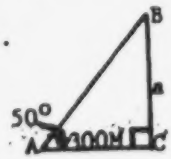
4. cot A

a) $\frac{8}{15}$ b) $\frac{15}{8}$ c) $\frac{8}{17}$ d) $\frac{15}{17}$ e) $\frac{17}{8}$

5. Sin A

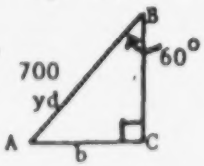
a) $\frac{8}{15}$ b) $\frac{8}{17}$ c) $\frac{17}{8}$ d) $\frac{15}{17}$ e) $\frac{17}{15}$

6. Find side a.



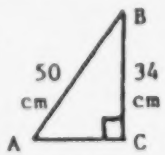
a) 357.6 M b) 192.8 M c) 309.4 M d) 229.8 M e) 251.7 M

7. Find side b.



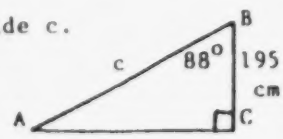
a) 404.2 yd. b) 610.4 yd. c) 606.2 yd. d) 1212.4 yd. e) 350.0 yd.

8. Find angle B.



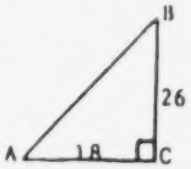
a) $34^{\circ}20'$ b) $47^{\circ}10'$ c) $55^{\circ}40'$ d) $42^{\circ}50'$ e) $47^{\circ}0'$

9. Find side c.



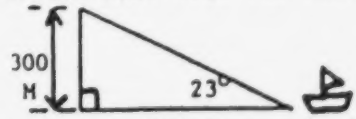
a) 6.8 cm. b) 5587.4 cm. c) 194.9 cm. d) 195.1 cm. e) 5644.8 cm.

10. Find angle A.



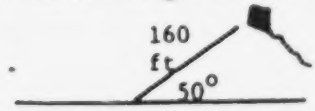
a) $43^{\circ}50'$ b) $55^{\circ}20'$ c) $34^{\circ}40'$ d) $45^{\circ}0'$ e) $46^{\circ}10'$

11. How far is the boat from the foot of the cliff?



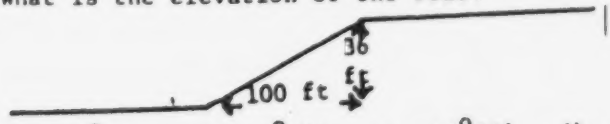
a) 127.4 M b) 706.8 M c) 117.2 M d) 767.9 M e) 276.2 M

12. How high above the ground is the kite?



a) 122.6 ft. b) 102.8 ft. c) 190.7 ft. d) 208.9 ft. e) 248.9 ft.

13. What is the elevation of the road?

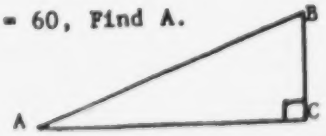


a) $21^{\circ}10'$ b) $68^{\circ}50'$ c) $19^{\circ}50'$ d) $71^{\circ}20'$ e) 36.0°

14. Find the hypotenuse.

a) 49.5 KM b) 50.8 KM c) 225.8 KM d) 977.8 KM e) 214.4 KM

15. b = 43, c = 60, Find A.



a) $44^{\circ}10'$ b) $35^{\circ}40'$ c) $45^{\circ}50'$ d) $46^{\circ}50'$ e) $54^{\circ}20'$

The Pythagorean Formula expresses the relationship between the three sides of a right triangle. Denoting the legs as a and b, and the hypotenuse (the side opposite the right angle) as c, we have the formula:

$$a^2 + b^2 = c^2$$

16. For b = 8 and c = 10, find a.

a) 12.8 b) 4.2 c) 6.8 d) 6.0 e) 1.4

17. For c = 15 and a = 7, find b.

a) 8 b) 2.8 c) 13.3 d) 16.6 e) 13.6

18. For a = 4 and b = 5, find c.

    a) 1 b) 3 c) 6.4 d) 5.6 e) 7.1

19. For a = 3.1 and c = 4.6, find b.

    a) 3.3 b) 3.4 c) 5.5 d) 1.2 e) 3.5

20. For b = 11 and c = 12, find a.

    a) 16.3 b) 1 c) 3.6 d) 4.8 e) 5.7

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